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Fish population data from Wuskwatim and Apussigamasi lakes, 1984

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ABSTRACT

Samples of the fish populations from Wuskwatim and Apussigamasi lakes were taken during the summer of 1984. The collected data were analyzed paying specific attention to the relative abundance of each species and the effects of various mesh sizes on the fish species. Further analyses concerning growth rates and age compositions were carried out on whitefish (Coregonus clupeaformis), walleye (Stizostedion vitreum), sauger (Stizostedion canadense) and northern pike (Esox lucius). This report is concerned with summarizing the data so as to provide a database for future management purposes of the previously mentioned fisheries.

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INTRODUCTION

The data presented in this report were collected for Project 3.3 under the Canada-Manitoba Agreement on t e Study and Monitoring of Mercury in the Churchill River Diversion. Fish population data and mercury data were collected from Wuskwatim and Apussigamasi lakes during the summer of 1984. These lakes are located along the Burntwood River system in the general vicinity of Thompson, Manitoba. The purpose of this report is to present the fish population data for these two northern Manitoba lakes. The mercury data and analysis for these same two lakes will be presented in subsequent reports.

The fish population data was designed to provide baseline information on selected population parameters for the various fish species of Wuskwatim and Apussigamasi lakes. The basic analyses of the data included:

1) a fish species list along with their relative abundance derived from catch per unit effort (CUE) determinations,
2) the effect of mesh size in regards to average weight, length and age, total weight, number and maturity of each species caught, and
3) a description of age compositions and growth rates

of whitefish (*Coregonus clupeaformis*), walleye (*Stizostedion vitreum*), sauger (*Stizostedion canadense*) and northern pike (*Esox lucius*).

This report is of a preliminary nature and is not concerned with the interpretation of results.

METHODS

In order to obtain a useful fish population sample from the two lakes a standard gang of gillnets was used for the experimental fishing. This standard gang consisted of six gillnets, each of a different mesh size. The mesh sizes used were 3.8 cm (1.5 in.), 5.1 cm (2.0 in.), 7.6 cm (3.0 in.), 9.5 cm (3.75 in.), 10.8 cm (4.25 in.), and 12.7 cm (5.0 in.). Each net in the standard gang was 22.9 m (25 yd.) long and 1.8 m (6 ft.) deep. The total length of each standard gang was 137.1 m (150 yd.).

In both Wuskwatim and Apussigamasi lakes, experimental fishing was carried out until a minimum sample size of 250 fish was obtained for whitefish, walleye, sauger and northern pike. The sample size was arbitrarily set at 250 to allow for proper index analyses. However, due to the relative abundance of each species, this sample size was not obtained for every species of fish.

The data collected from the experimental fishing survey were the numbers and total weight of each species in each gillnet. Whitefish, walleye, sauger and northern pike were individually sampled for fork length, round weight, sex and maturity. As well, structures were taken for subsequent age determination. These aging structures were otoliths from whitefish, walleye and sauger, and cleithra from northern pike.

The data analyses performed on the collected data were essentially simple computations requiring only basic arithmetic and statistics. The growth models derived were somewhat more complex and thus, require some explanation.

Von Bertalanffy (1938) described growth of animals by the following equation:

$$Lt = L_{\infty}(1-e^{-K(t-t_o)}),$$

where L_t = length at age, t (mm),

L_{∞} = asymptotic length or maximum length (mm)

K = rate of decrease in length increments, and

t_o = hypothetical age at which the fish's length was zero (years).

Length was measured in millimeters and refers to fork length and age was measured in years. The asymptotic length, L_{∞}, is the point on the X,Y plot of L_{t+1} vs L_t intersecting the line of unity (Walford 1946). The rate of decrease in length increments, K, or growth coefficient was described by Brody (1927). This coefficient was found to be the slope of the line from the plot of $\text{Log}_e (L - L_t)$ vs t. The last coefficient, t_o, is a calculated value from the equation:

$$t = \frac{((\text{y-intercept}) - \text{Log}_e (L_{\infty}))}{|\text{slope}|}$$

In this equation, y-intercept and slope are taken from the Brody plot.

RESULTS

Maps of Wuskwatim and Apussigamasi lakes are included in Figs. 1 and 2. These maps also have marked on them, the location of each standard gang that was set. The catch summaries of these sets are in Tables 1 and 2. The CUE and relative abundance of each species for both of the lakes are included in Table 3. A mesh size breakdown of numbers, total weights and average weights by species are found in Tables 4 and 5.

The remaining tables and figures contain further analyses for whitefish, walleye, sauger and northern pike. They are as follows:

1) mesh size effect on CUE, mean length, mean weight, percentage of immature fish, mean age and age-% frequency (Tables 6-13),
2) age specific mean lengths, weights and condition factors for males, females and all fish combined (Tables 14-21),
3) length-weight regressions (Table 22),
4) mortality and survival rates for all fish (Table 23),
5) age composition histograms for each species (Figs. 3-6)
6) length frequency histograms for each species (Figs. 7-10), and
7) growth models (Figs. 11-13).

ACKNOWLEDGEMENTS

Data were collected by Ian Hagenson, Dave Green, Art Derksen, and various members of the northeastern regional staff, Thompson. Thanks to C. Caverly for typing this manuscript.

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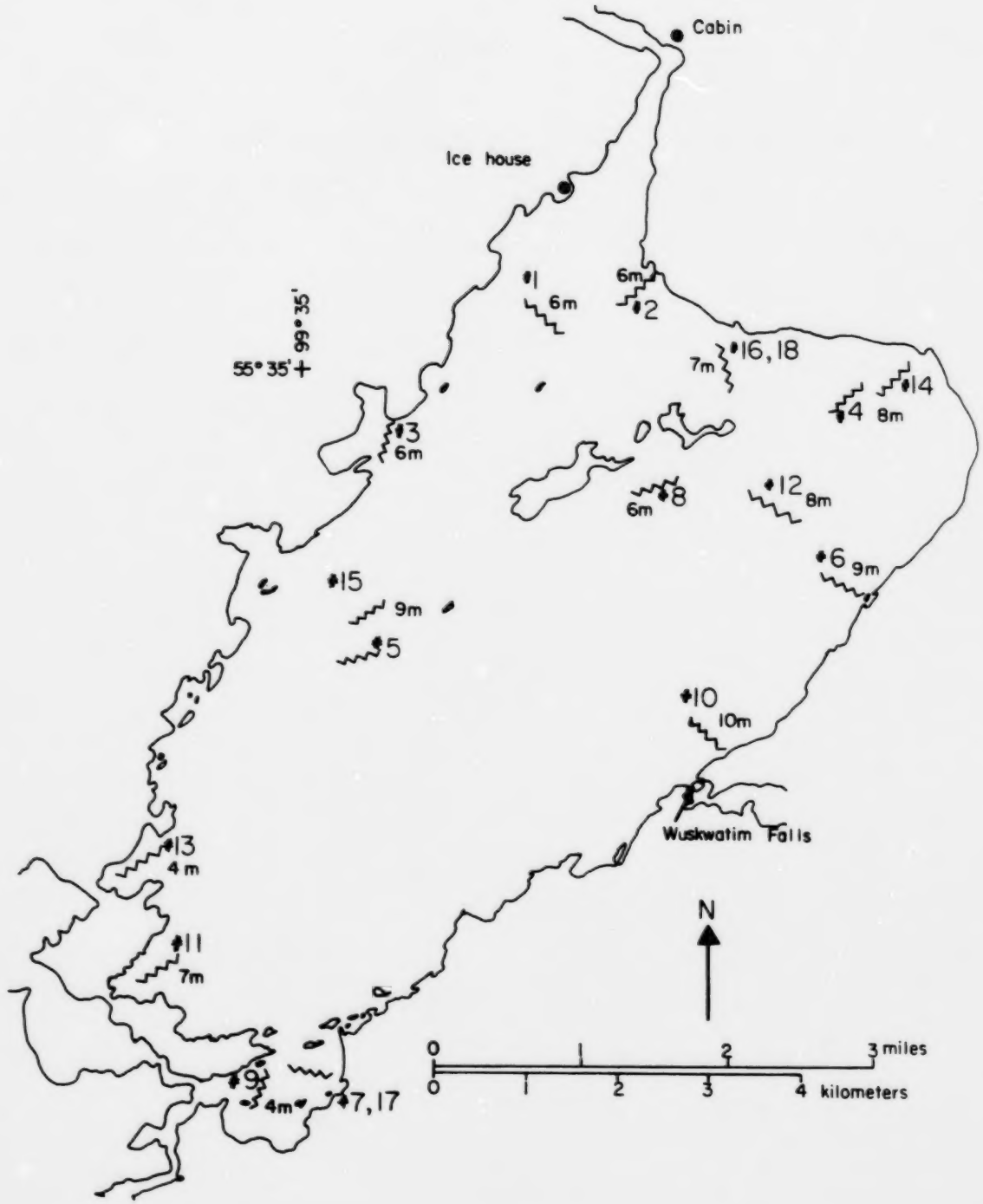

Fig. 1. Netting locations in Wuskwatim Lake, 1984.

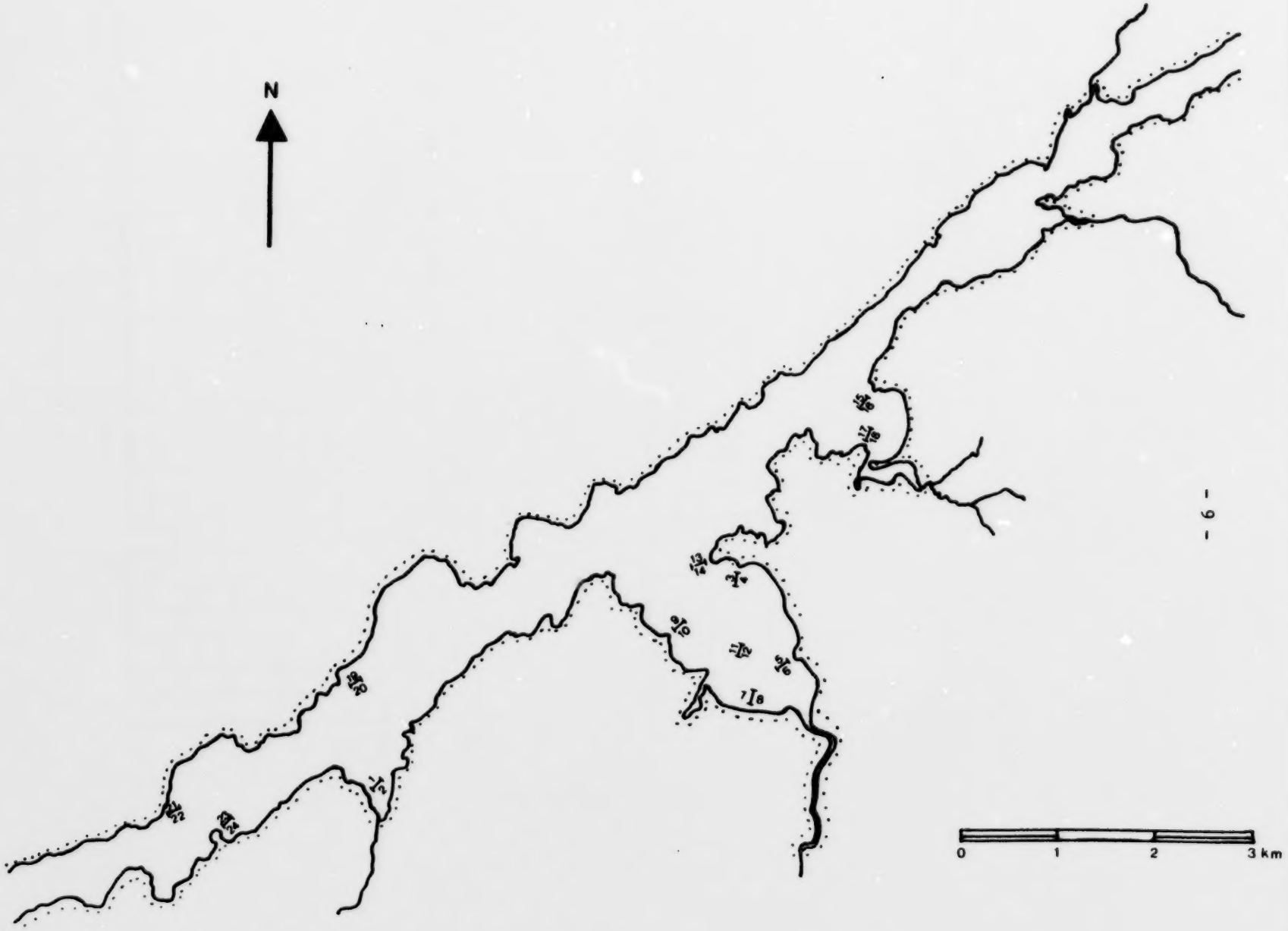

Fig. 2. Netting locations in Apussigamasi Lake, 1984.

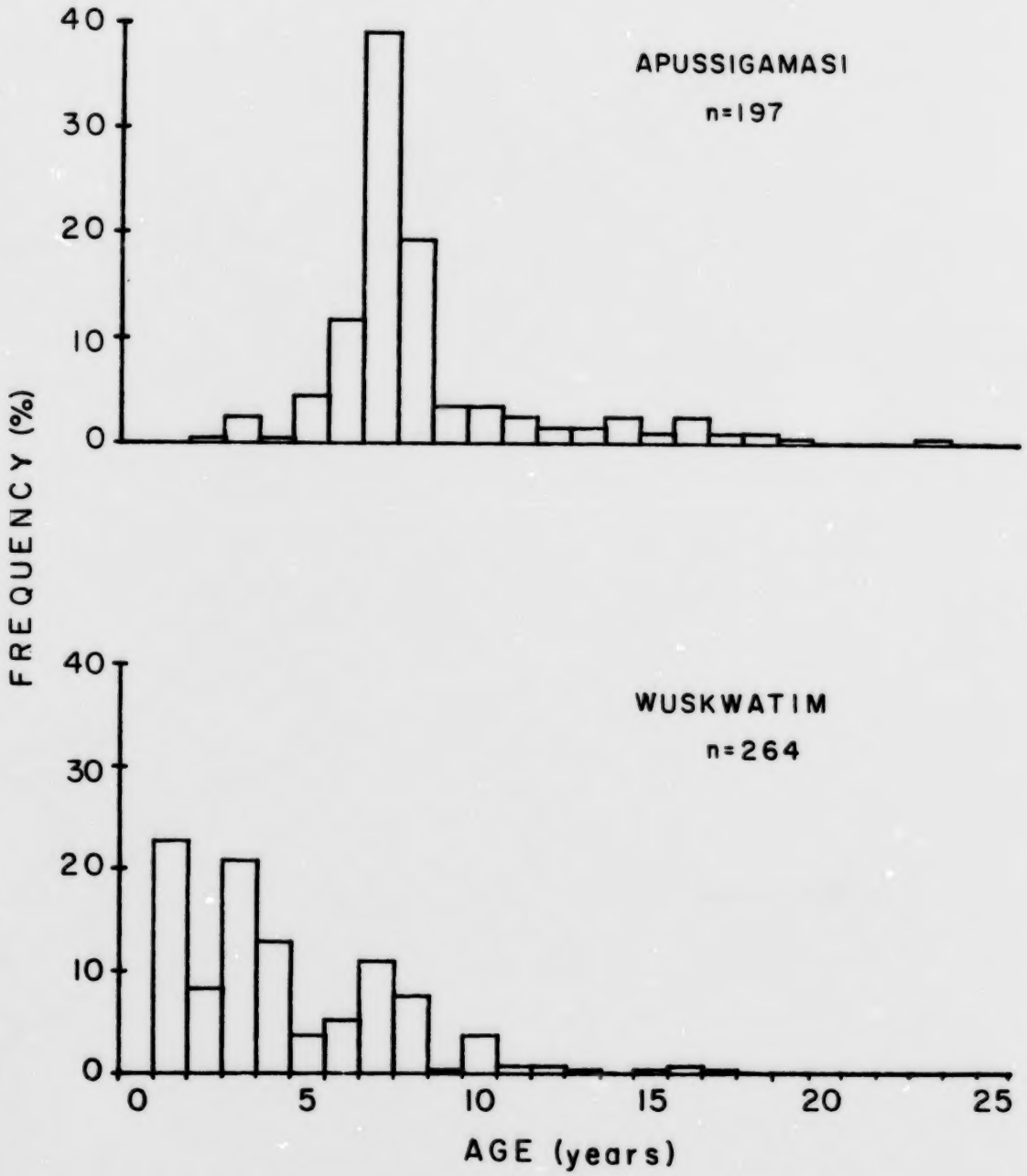

Fig. 3. Age composition of whitefish, 1984.

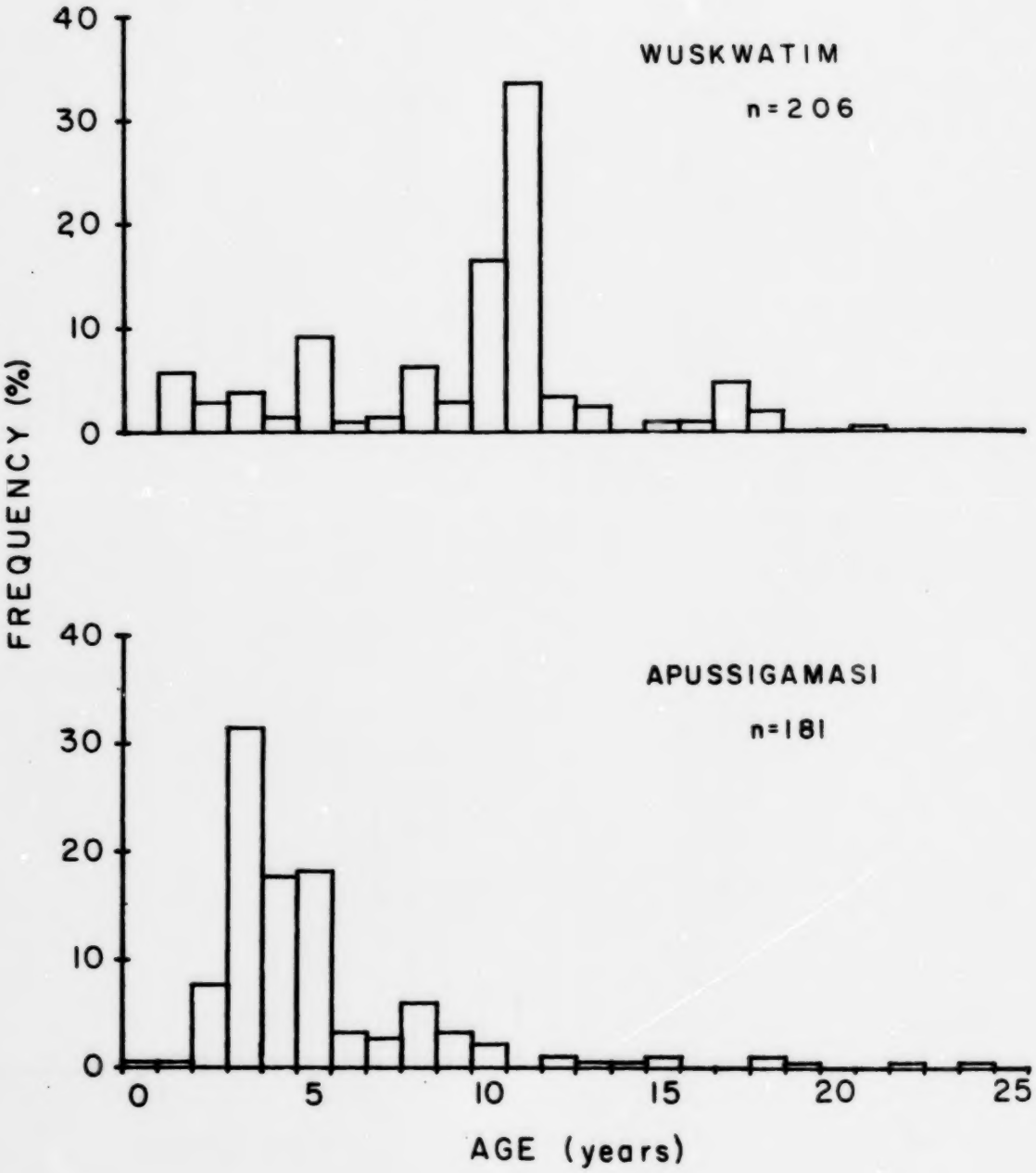

Fig. 4. Age composition of walleye, 1984.

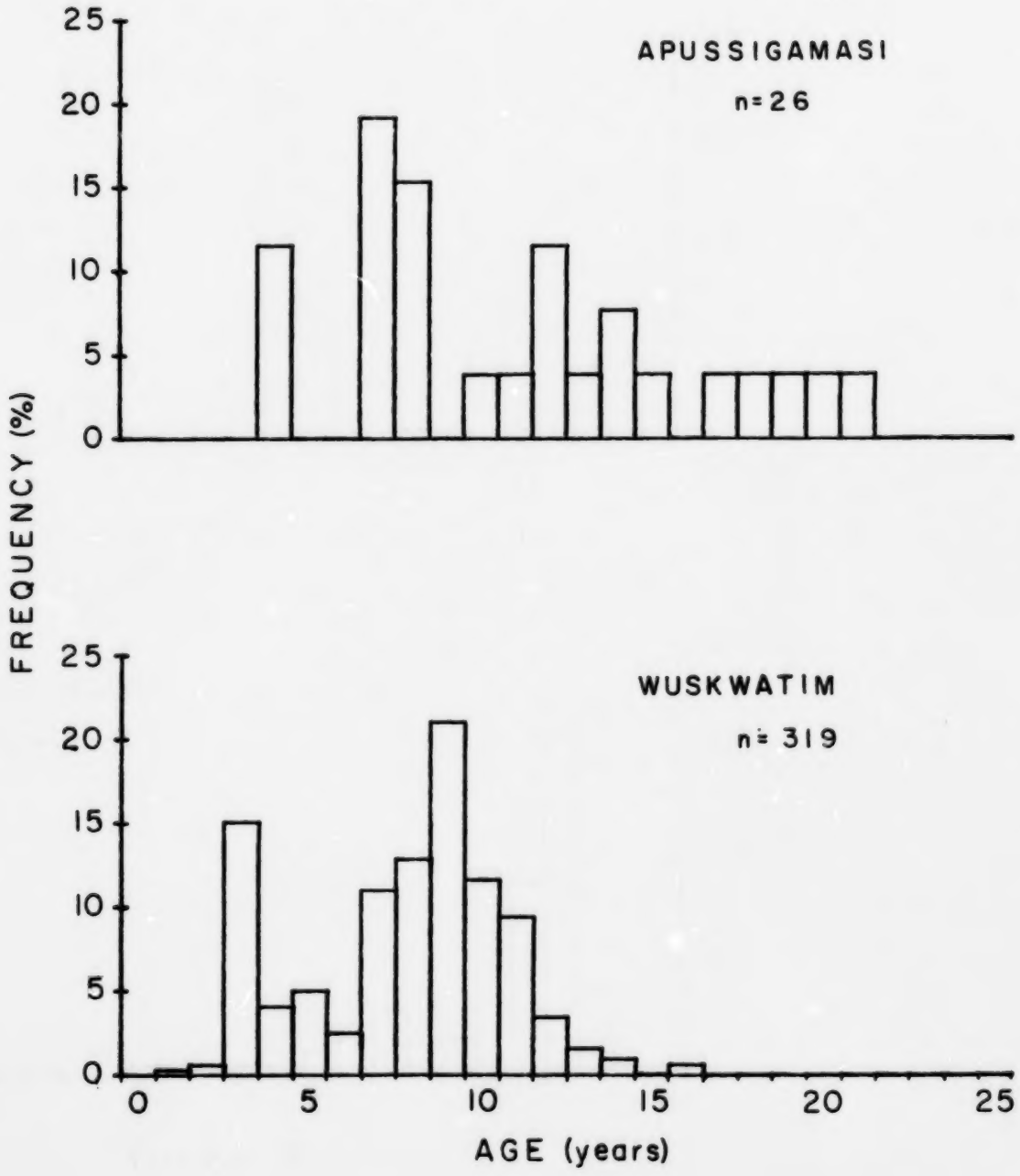

Fig. 5. Age composition of sauger, 1984.

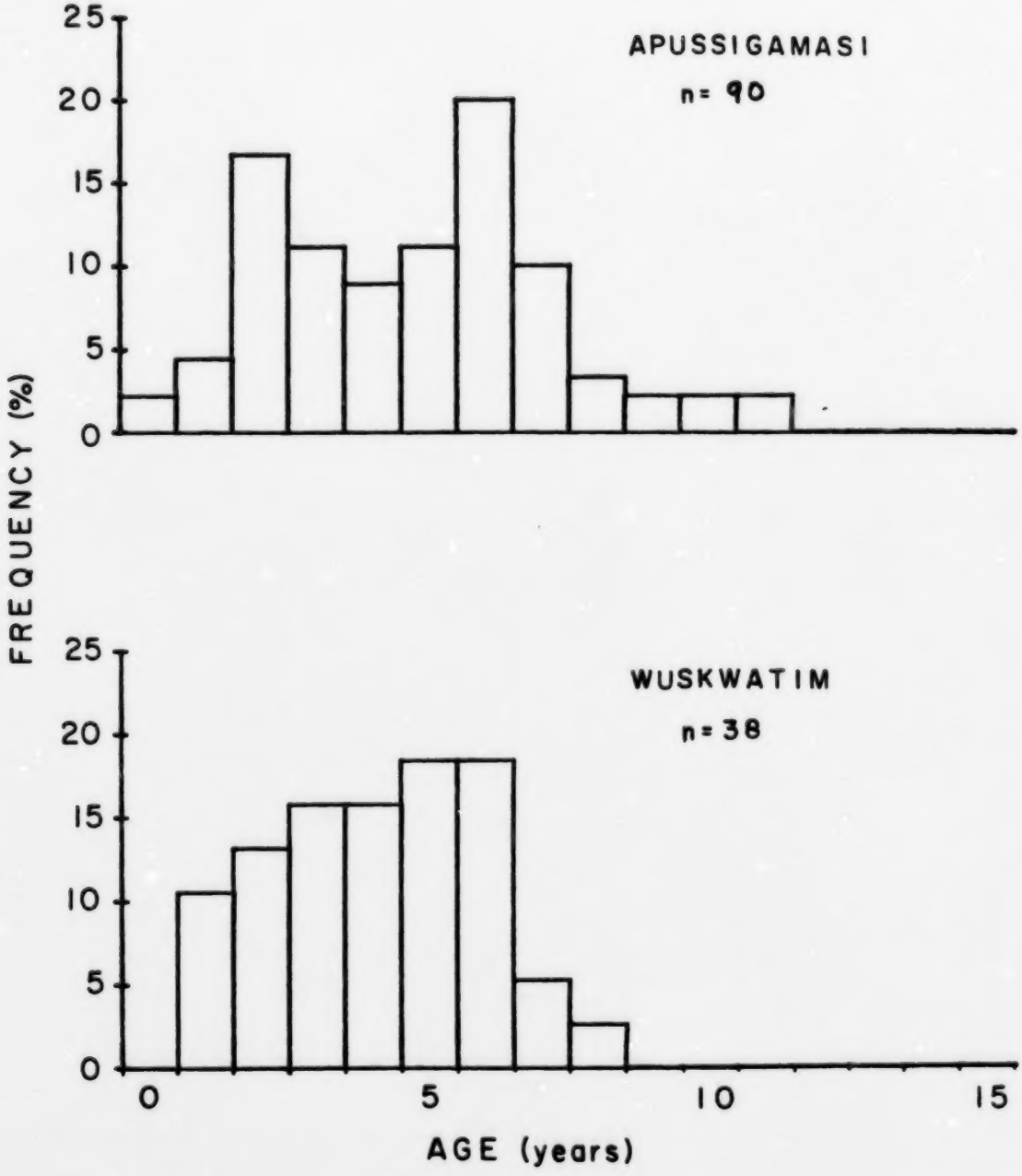

Fig. 6. Age composition of northern pike, 1984.

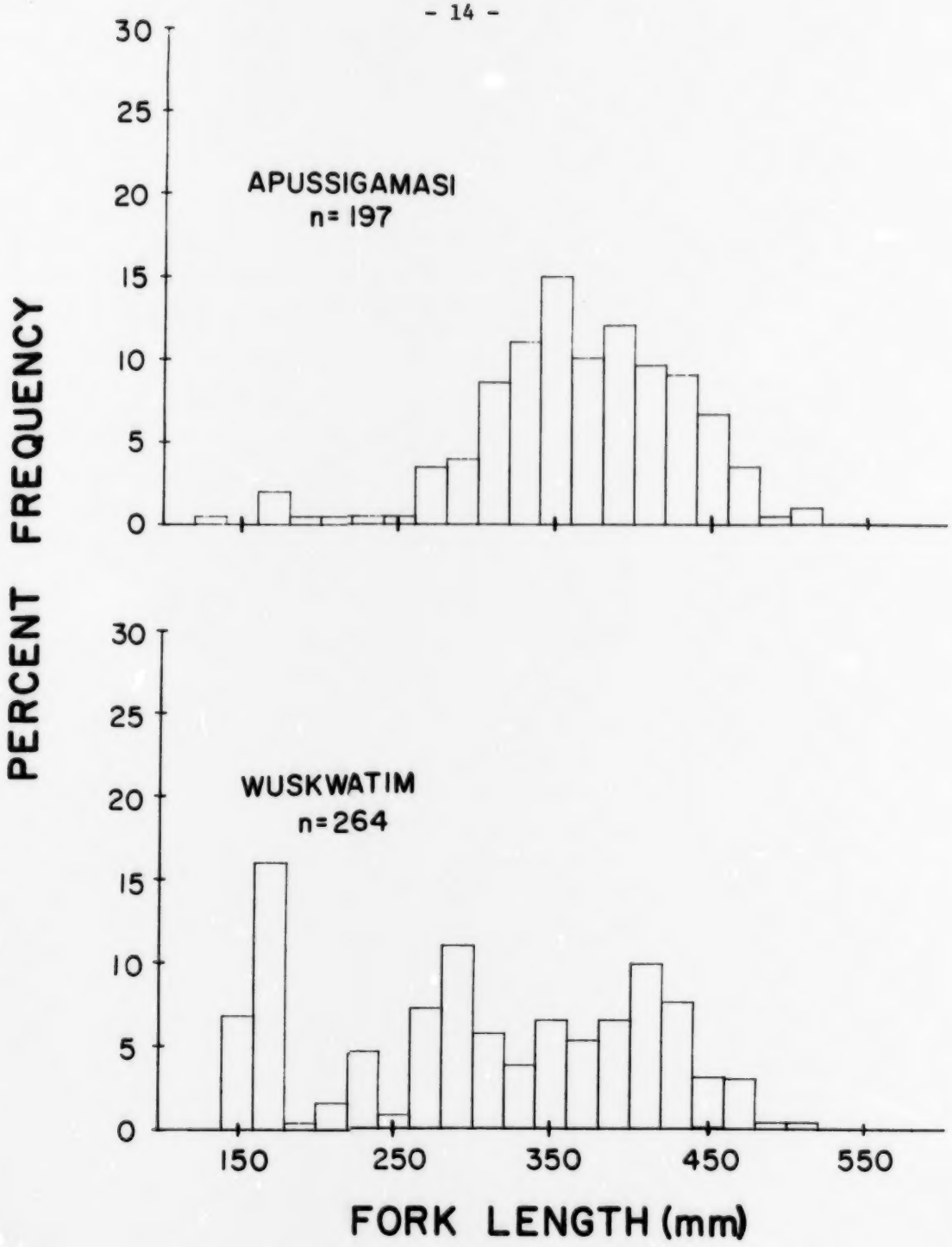

Fig. 7. Length frequency histograms for whitefish from Wuskwatim and Apussigamasi lakes, 1984.

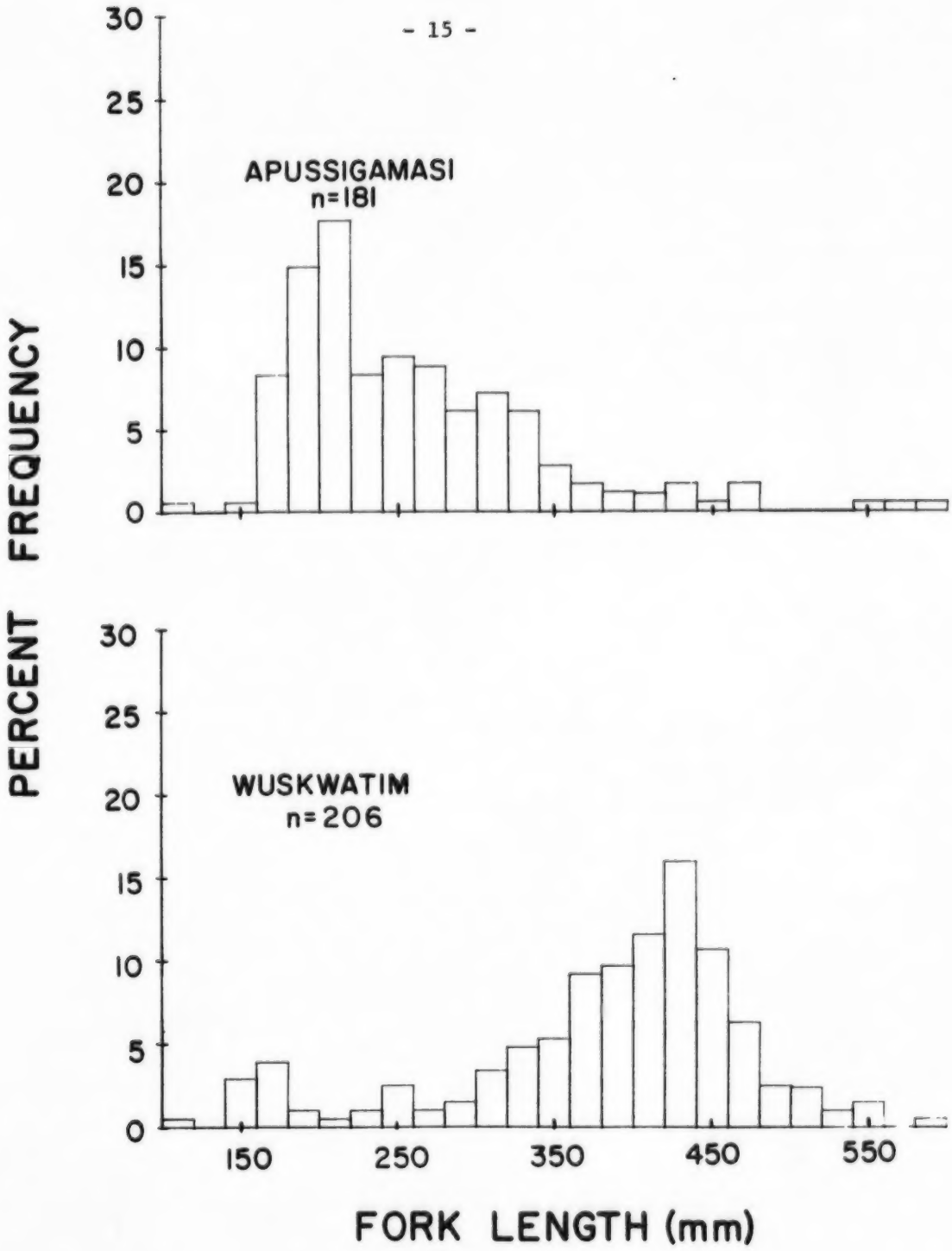

Fig. 8. Length frequency histograms for walleye from Wuskwatim and Apussigamasi lakes, 1984.

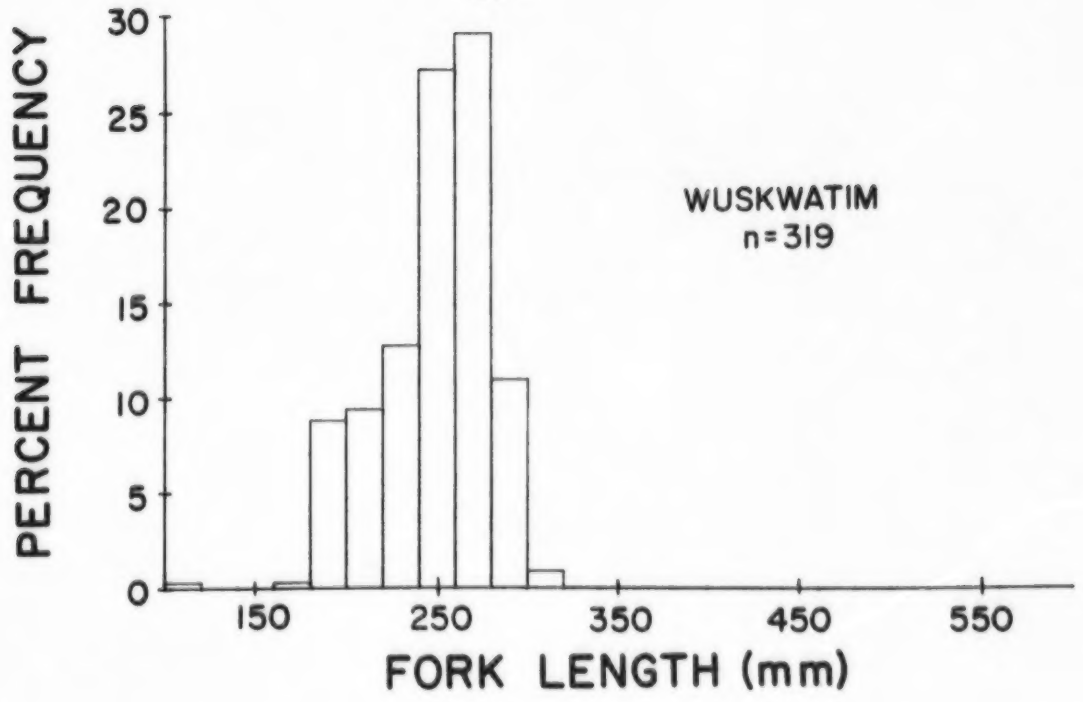

Fig. 9. Length frequency histogram for sauger from Wuskwatim Lake, 1984.

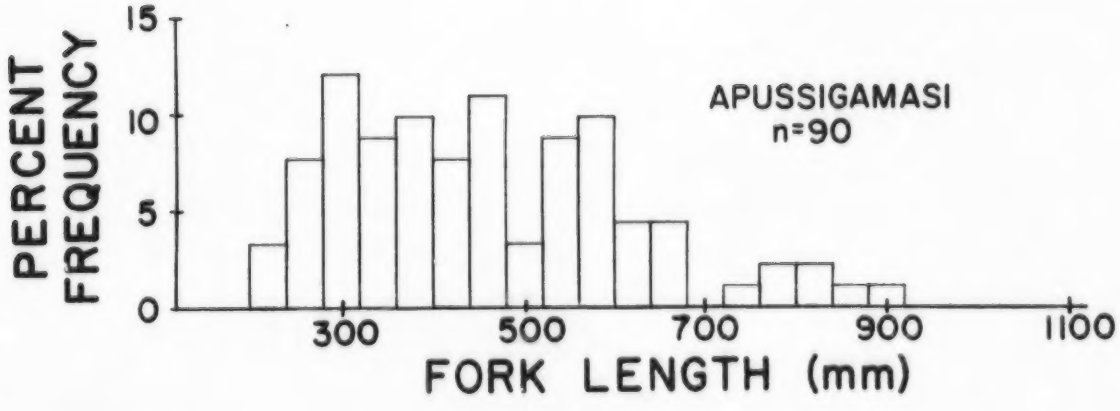

Fig. 10. Length frequency histogram for northern pike from Apussigamasi Lake, 1984.

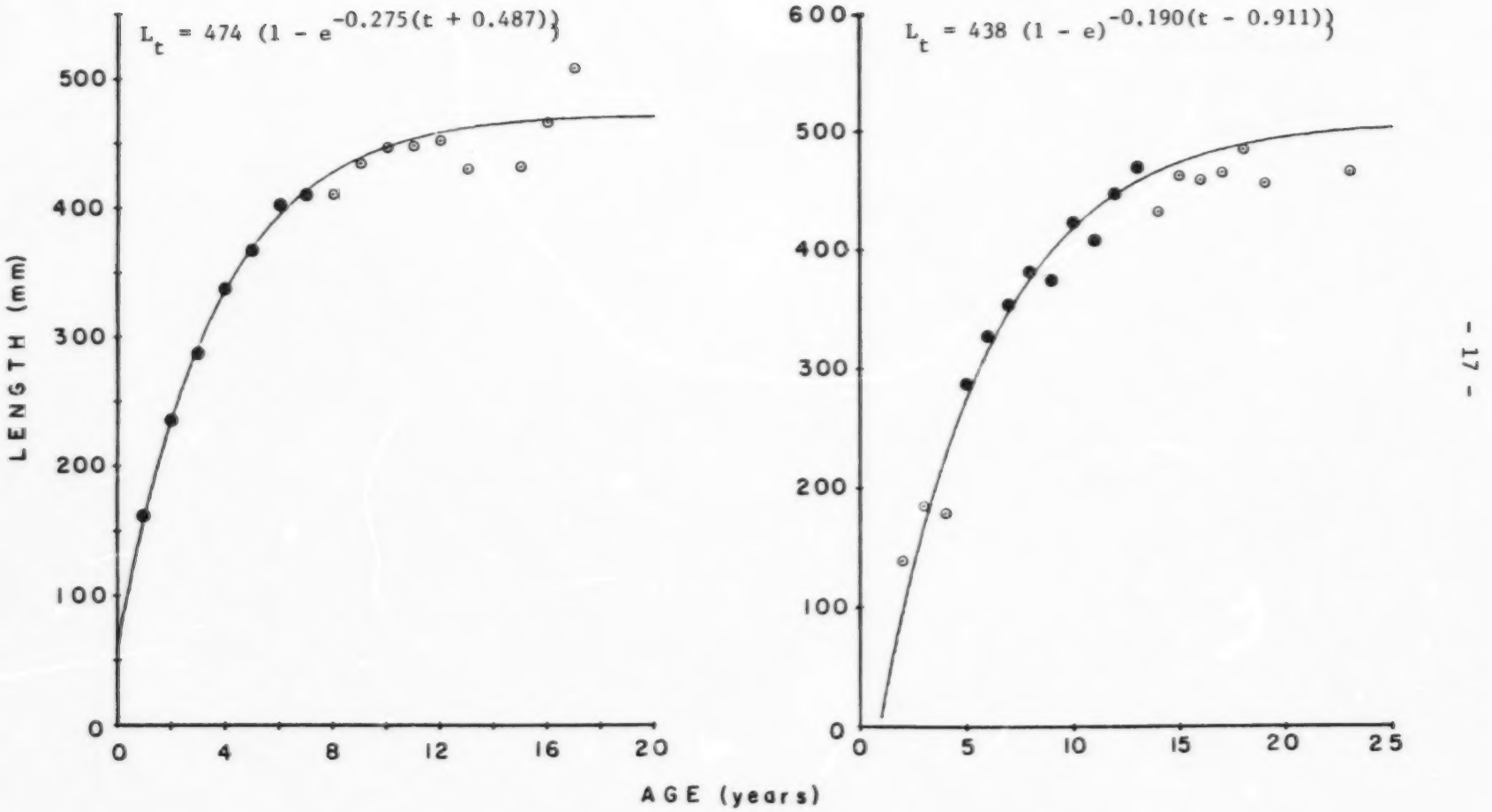

Fig. 11. von Bertalanffy growth models for whitefish from Wuskwatim and Apussigamasi Lakes, respectively, 1984.

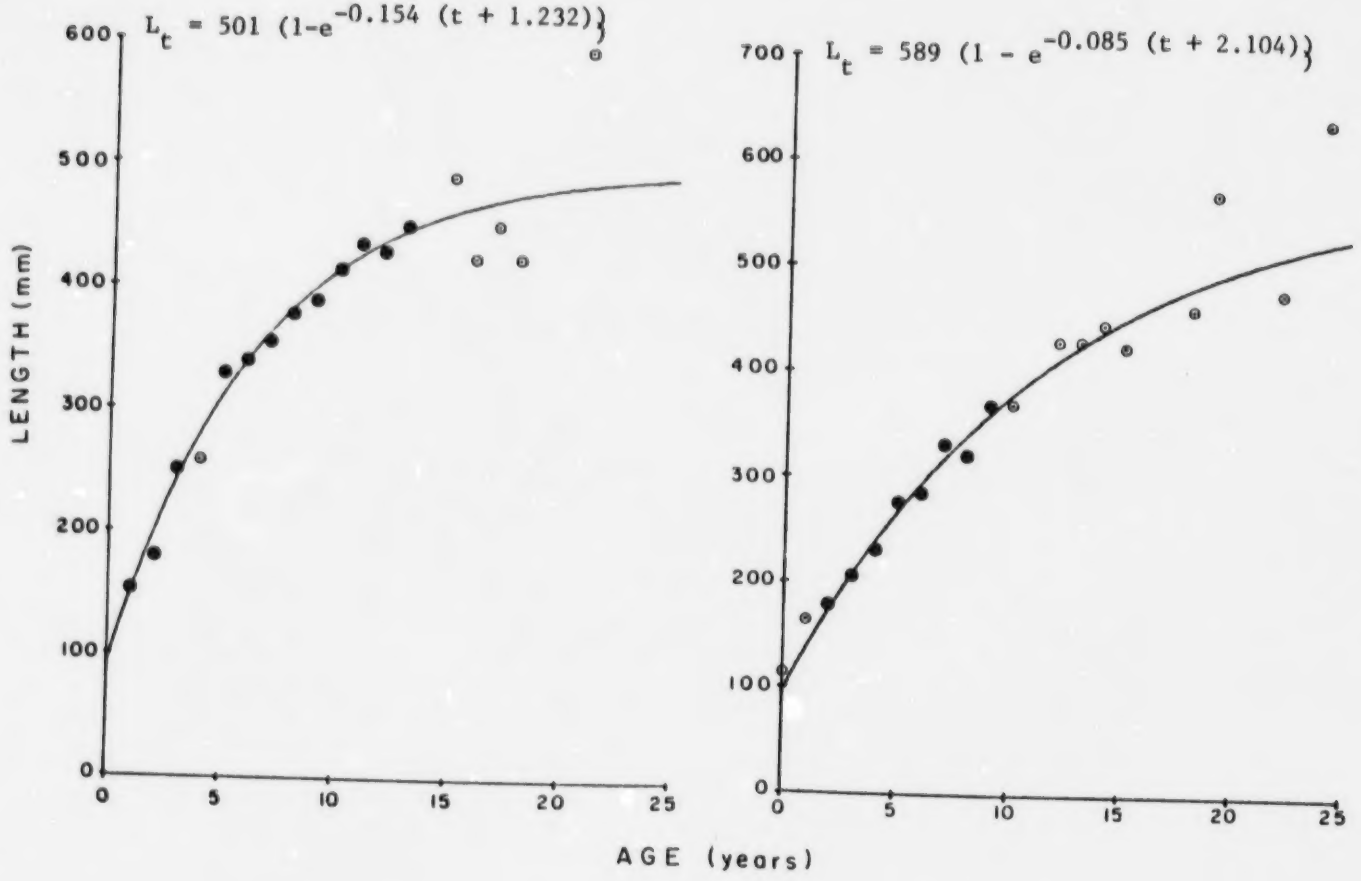

Fig. 12. von Bertalanffy growth model for walleye from Wuskwatim and Apussigamasi Lakes, respectively, 1984.

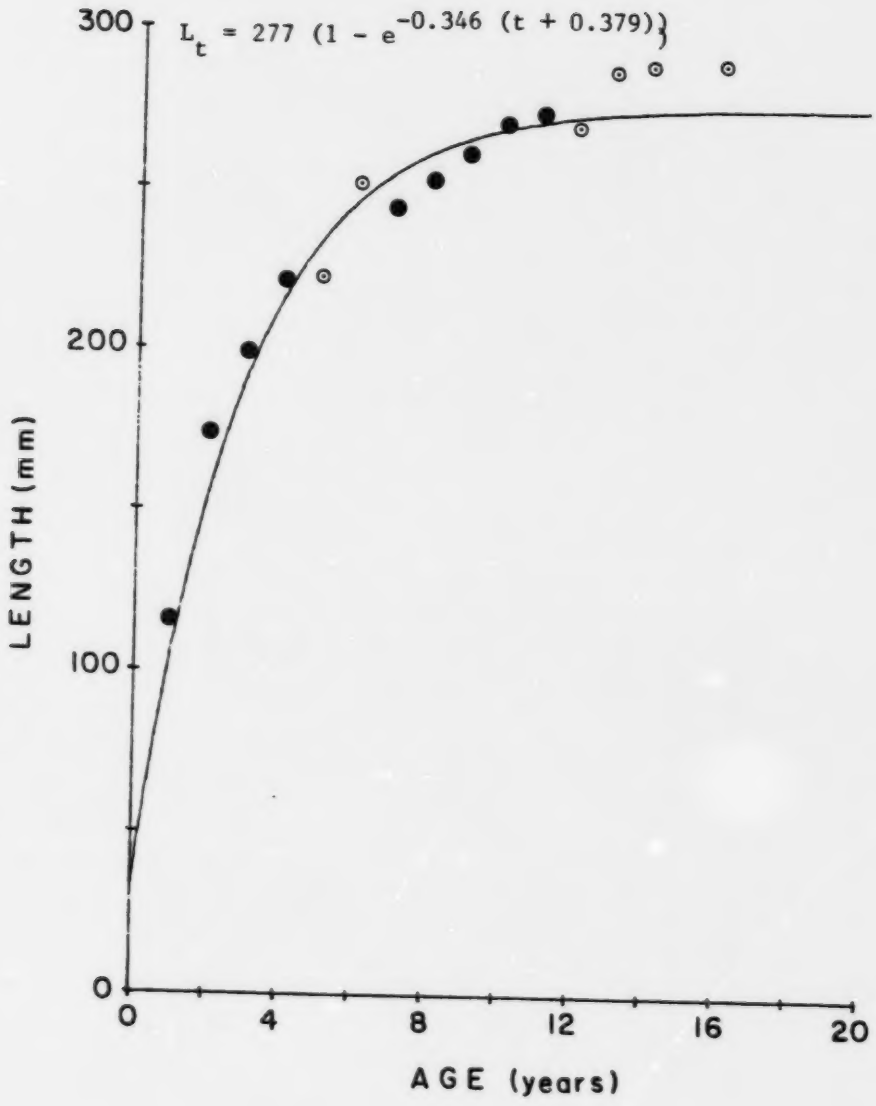

Fig. 13. von Bertalanffy growth model for sauger from Wuskwatim Lake, 1984.

Table 1. Catch summary for experimental fishing sets from Wuskwatim Lake, 1984.

Set No.	Date of Set	Whitefish	Cisco	Walleye	Sauger	Northern pike	White Sucker	Yellow Perch	Longnose Sucker	Burbot	Total
1	August 1	22	8	3	8	1	9	1	1	-	53
2	August 1	5	67	10	29	-	1	1	-	-	115
3	August 2	20	18	2	11	1	6	1	-	-	61
4	August 2	39	147	6	39	-	3	-	-	-	234
5	August 3	20	39	6	13	-	4	-	1	2	85
6	August 3	10	38	7	64	1	9	-	-	-	129
7	August 4	1	83	22	10	7	16	13	-	-	152
8	August 4	12	54	4	26	2	10	-	-	-	108
9	August 5	4	152	7	20	3	30	13	-	-	229
10	August 5	28	234	9	99	-	7	-	3	3	383
11	August 6	8	23	1	20	8	16	9	-	-	85
12	August 6	6	124	4	19	-	3	-	1	-	157
13	August 7	-	6	1	6	4	8	4	-	-	29
14	August 7	33	67	2	37	-	8	-	-	-	147
15	August 8	23	27	2	19	-	4	-	1	-	76
16	August 8	18	63	35	34	1	8	-	-	-	159
17	August 9	-	59	42	13	7	22	5	-	-	148
18	August 9	23	133	43	40	1	2	-	-	-	242
Total		272	1342	206	507	38	168	47	7	5	2592

Table 2. Catch summary for experimental fishing sets in Apussigamasi Lake, 1984.

Set No.	Date of Set	Whitefish	Cisco	Walleye	Sauger	Northern Pike	White Sucker	Longnose Sucker	Yellow Perch	Shorthead Redhorse	Mooneye	Burbot	Trout Perch	Lake Chub	Total
1	June 19	2	2	5	-	1	19	-	-	1	1	-	-	1	32
2	June 19	2	3	5	1	3	18	-	-	-	-	-	-	2	34
3	June 20	9	3	15	-	4	14	1	-	2	39	-	-	1	88
4	June 20	7	8	13	-	-	20	-	-	-	9	-	-	-	57
5	June 21	14	14	16	-	4	5	-	-	-	3	-	-	-	56
6	June 21	10	19	15	-	3	19	2	-	2	1	-	-	-	71
7	June 22	10	1	3	-	36	2	-	-	-	20	-	-	-	72
8	June 22	8	14	14	-	7	10	-	-	-	1	-	-	-	54
9	June 26	9	13	7	2	-	9	-	1	-	18	-	-	-	59
10	June 26	7	7	2	3	1	13	1	-	-	1	-	-	-	35
11	June 27	4	5	9	-	3	9	-	-	-	-	-	-	-	30
12	June 27	4	8	8	-	1	13	-	-	-	-	-	-	-	34
13	June 28	4	2	5	-	1	1	1	-	-	12	-	-	1	27
14	June 28	11	3	13	4	3	16	10	-	-	-	1	1	-	62
15	June 29	12	5	5	-	3	16	2	-	-	1	-	-	-	44
16	June 29	9	3	4	2	2	9	1	-	-	9	-	-	1	40
17	June 30	12	4	4	-	-	12	1	-	-	-	-	-	-	33
18	June 30	9	4	3	-	7	9	1	-	-	8	-	-	-	41
19	July 4	19	1	7	-	2	17	6	-	1	-	-	-	2	55
20	July 4	4	4	3	1	-	-	1	-	1	1	-	-	2	17
21	July 5	8	2	4	7	1	9	6	-	4	2	-	-	5	48
22	July 5	1	-	4	-	2	2	1	-	1	5	-	-	1	17
23	July 6	11	-	9	2	2	4	7	-	-	1	-	-	-	36
24	July 6	11	1	8	4	4	21	6	-	1	1	-	-	3	60
Total		197	126	181	26	90	267	47	1	13	133	1	1	19	1102

Table 3. Catches per unit effort (CUE) and percent frequency of occurrence for fish species in Wuskwatim and Apussigamasi lakes, 1984.

Species	CUE (number/standard gang/day)		Percent of Total Catch	
	Wuskwatim (18*)	Apussigamasi (24*)	Wuskwatim	Apussigamasi
Whitefish	15.1	8.2	10.5	17.9
Walleye	11.4	7.5	7.9	16.4
Sauger	28.2	1.1	19.5	2.3
Northern pike	2.1	3.8	1.5	8.2
Cisco	74.6	5.3	51.8	11.4
White sucker	9.3	11.1	6.5	24.2
Longnose sucker	0.4	2.0	0.3	4.3
Shorthead redhorse	-	0.5		1.2
Yellow perch	2.6	0.04	1.8	0.1
Mooneye	-	5.5		12.1
Trout perch	-	0.04		0.1
Burbot	0.3	0.04	0.2	0.1
Lake chub	-	0.8		1.7
Total	143.9	45.9	100	100

*Total number of sets for each lake.

Table 4. Mesh size effects on the number and weight (kg) of fish caught in 18 experimental fishing sets in Wuskwatim Lake, 1984. (sample size in parentheses).

Species	Mesh size						Total
	1.5	2.0	3.0	3.75	4.25	5.0	
Whitefish	9.64(65)	11.40(35)	34.95(73)	24.45(27)	30.92(31)	54.62(41)	165.98(272)
Walleye	11.51(32)	15.22(35)	32.88(47)	48.87(58)	32.15(29)	6.53(5)	147.16(206)
Sauger	30.44(252)	40.79(252)	0.39(2)	0.02(1)	-	-	71.64(507)
Northern pike	4.29(9)	9.45(14)	10.72(10)	4.78(4)	1.70(1)	-	30.94(38)
Cisco	44.09(335)	106.16(487)	181.48(282)	81.18(100)	78.41(77)	43.35(61)	534.67(1342)
White sucker	1.94(7)	14.14(30)	43.86(61)	48.09(48)	25.35(22)	-	133.38(168)
Longnose sucker	-	0.40(2)	-	0.96(1)	1.00(1)	4.64(3)	7.00(7)
Yellow perch	-	0.85(4)	9.04(28)	6.84(15)	-	-	16.73(47)
Burbot	-	-	-	3.62(3)	2.54(2)	-	6.16(5)
Total	101.91(700)	198.41(859)	313.32(503)	218.81(257)	172.07(163)	109.14(110)	1113.66(2592)

Table 5. Mesh size effects on the number and weight (kg) of fish caught in 24 experimental fishing sets in Apussigamasi Lake, 1984. (sample size in parentheses).

Species	Mesh size						Total
	1.5	2.0	3.0	3.75	4.25	5.0	
Whitefish	1.68(5)	6.39(17)	13.82(25)	40.90(55)	41.10(43)	63.52(52)	167.40(197)
Walleye	6.54(64)	17.12(78)	12.58(25)	3.85(6)	6.27(6)	2.50(2)	48.86(181)
Sauger	1.09(4)	2.90(9)	5.96(12)	-	0.16(1)	-	10.11(26)
Northern pike	15.20(29)	15.64(27)	22.29(17)	21.55(10)	15.80(6)	1.22(1)	91.68(90)
Cisco	4.12(64)	4.57(31)	6.38(16)	3.72(7)	3.55(7)	0.48(1)	22.82(126)
White sucker	3.55(9)	5.16(9)	28.20(39)	113.64(123)	62.90(53)	48.86(34)	262.30(267)
Longnose sucker	1.33(1)	1.91(2)	8.24(7)	9.96(10)	9.17(7)	33.18(20)	63.79(47)
Shorthead redhorse	-	1.09(1)	1.29(2)	5.22(6)	0.69(1)	3.48(3)	11.77(13)
Yellow perch	-	0.11(1)	-	-	-	-	0.11(1)
Mooneye	1.22(11)	14.86(89)	1.19(5)	0.46(2)	2.85(13)	2.76(13)	23.34(133)
Lake chub	0.71(11)	0.65(6)	-	-	0.14(1)	0.08(1)	1.58(19)
Trout perch	-	0.03(1)	-	-	-	-	0.03(1)
Burbot	0.09(1)	-	-	-	-	-	0.09(1)
Total	35.53(199)	70.43(271)	99.95(148)	199.30(219)	142.49(138)	156.08(127)	703.88(1102)

Table 6. Mesh size effects on whitefish catches from Wuskwatim Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	65	35	73	27	31	41	272
CUE (no/100 yds./day)*	14.44	7.78	16.22	6.0	6.88	9.11	10.07
CUE (kg/100 yds./day)*	2.14	2.53	7.77	5.43	6.87	11.94	6.13
Mean length (mm)	182[1]	252[2]	302	369	384	424	301
Mean weight(g)	148	325	478	905	997	1332	610
Number mature	4	4	10	14	22	39	93
Number immature	56	28	63	13	9	1	170
% mature	6.7	12.5	13.7	51.9	71.0	97.5	35.4
Mean age(years)	1.5	2.9	3.5	5.4	6.3	8.7	4.2
Age (years)	Frequency(%)						Total
1	88.33	21.88					22.73
2	1.67	46.88	6.85	3.70			8.33
3	3.33	12.5	61.64	14.81			20.83
4		6.25	21.92	25.93	22.58	4.88	12.88
5			1.37	3.70	22.58	2.44	3.79
6	1.67		1.37	22.22	9.68	7.32	5.30
7	1.67	3.13	5.48	18.52	22.58	26.83	10.98
8	3.33	3.13	1.37	3.70	12.90	26.83	7.58
9					3.23		0.38
10		3.13		7.41	3.23	14.63	3.79
11		3.13				2.44	0.76
12						4.88	0.76
13					3.23		0.38
15						2.44	0.38
16						4.88	0.76
17						2.44	0.38

* The total effort was 450 yards for each mesh
1 Based on a total of 60 since 5 whitefish were mass weighed
2 Based on a total of 32 since 3 whitefish were mass weighed.

Table 7. Mesh size effects on whitefish catches in Apussigamasi Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	5	17	25	55	43	52	197
CUE (no./100 yds./day)*	0.83	2.83	4.17	9.17	7.17	8.67	5.47
CUE (kg./100 yds./day)*	0.28	1.07	2.30	6.82	6.85	10.59	4.65
Mean length (mm)	221	278	324	354	382	420	364
Mean weight(g)	336	376	553	744	956	1222	850
Number mature	1	3	9	33	37	50	133
Number immature	4	12	15	11	2	1	45
% mature	20.0	20.0	37.5	75.0	94.9	98.0	74.7
Mean age(years)	5.2	6.1	7.0	7.5	8.0	10.4	8.1
Age (years)	Frequency (%)						Total
2	20.0						0.51
3	40.0	17.6					2.54
4	20.0						0.51
5		17.6	12.0	5.6			4.57
6		17.6	20.0	16.4	14.0		11.68
7		41.2	40.0	49.1	41.9	2[illegible]	39.09
8			20.0	18.2	25.6	23.[illegible]	19.29
9			4.0	3.6	2.3	5.8	3.55
10			4.0	1.8	4.7	5.8	3.55
11				1.8	4.7	3.8	2.54
12		5.9				3.8	1.52
13					2.3	3.8	1.52
14	20.0				2.3	5.8	2.54
15						3.8	1.02
16				1.8	2.3	5.8	2.54
17						3.8	1.02
18						3.8	1.02
19				1.8			0.51
23						1.9	0.51

*Total effort was 600 yds. of net for each mesh size.

Table 8. Mesh size effects on walleye catches from Wuskwatim Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	32	35	47	58	29	5	206
CUE (no./100 yds./day)*	7.1	7.8	10.4	12.9	6.4	1.1	7.6
CUE (kg/100 yds./day)*	2.59	3.38	7.31	10.86	7.14	1.48	5.46
Mean length (mm)	267	332	394	423	459	476	383
Mean weight(g)	364	435	700	843	1109	1330	716
Number mature	6	13	32	51	28	4	134
Number immature	25	22	15	7	1	1	71
% mature	19.4[1]	47.1	68.1	87.9	96.6	80.0	65.4
Mean age(years)	4.75	7.40	10.06	10.97	11.45	13.40	
Age (years)	Frequency (%)						
1	34.38		2.13				5.83
2	18.75						2.91
3	3.13	20.00					3.88
4	3.13	5.71					1.46
5	9.38	28.57	8.51	1.72	3.45		9.22
6		2.86	2.13				0.97
7	3.13	2.86	2.13				1.46
8	3.13	5.71	10.64	6.90		20.0	6.31
9	3.13		8.51	1.72			2.91
10	9.38	5.71	25.53	24.14	10.34		16.50
11	3.13	17.14	23.40	51.72	68.97	20.0	33.50
12	3.13		4.26	5.17	3.45		3.40
13	3.13	2.86	2.13	1.72	3.45		2.43
15			2.13			20.0	0.97
16				1.72		20.0	0.97
17	3.13	5.71	4.26	3.45	6.90	20.0	4.85
18		2.86	4.26		3.45		1.94
21				1.72			0.49

* The total effort was 450 yards for each mesh.
[1] Based on a total of 31 since one walleye had an unknown maturity.

Table 9. Mesh size effects on walleye catches in Apussigamasi Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	64	78	25	6	6	2	181
CUE (no./100 yds./day)*	10.67	13.00	4.17	1.00	1.00	0.33	5.03
CUE (kg./100 yds./day)*	1.09	2.85	2.10	0.64	1.05	0.42	1.36
Mean length (mm)	206	253	349	357	348	440	258
Mean weight(g)	102	220	503	642	1045	1250	270
Number mature	0	9	14	3	3	1	30
Number immature	64	67	9	3	3	0	146
% mature	0	11.8	60.9	50.0	50.0	100	17.0
Mean age(years)	3.3	4.7	8.3	10.7	8.7	14.0	5.1
Age (years)	Frequency (%)						
0					16.7		0.55
1	1.6						0.55
2	15.6	5.1			33.3		7.73
3	48.4	30.8					31.49
4	23.4	19.2		33.3			17.68
5	10.9	26.9	20.0				18.23
6		5.1	8.0				3.31
7		2.6	12.0				2.76
8		5.1	24.0	16.7			6.08
9		1.3	16.0		16.7		3.31
10		1.3				50.0	2.21
12			4.0	16.7			1.10
13					16.7		0.55
14				16.7			0.55
15		1.3	4.0				1.10
18			4.0			50.0	1.10
19		1.3					0.55
22				16.7			0.55
24					16.7		0.55

*Total effort was 600 yards of net for each mesh size.

Table 10. Mesh size effects on sauger catches from Wuskwatim Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	252	252	2	1	0	0	507
CUE (no/100 yds./day)*	56.0	56.0	0.44	0.22	-	-	18.78
CUE (kg/100 yds./day)*	4.64	9.06	0.09	0.004	-	-	1.51
Mean length (mm)	236[1]	261[2]	268	116	-	-	248
Mean weight(g)	121	162	195	20	-	-	143
Number mature	68	98	2	0	-	-	168
Number immature	98	50	0	1	-	-	149
% mature	41.3	66.2	100	0	-	-	53.0
Mean age(years)	6.7	9.0	9.5	1.0	-	-	7.8
Age (years)	Frequency (%)						
1				100.0			0.31
2	1.20						0.63
3	28.14	0.67					15.05
4	6.59	1.34					4.08
5	7.19	2.68					5.02
6	0.60	4.70					2.51
7	8.98	13.42					10.97
8	11.38	14.09	50.0				12.85
9	15.57	27.52					21.00
10	8.98	14.77					11.60
11	6.59	12.08	50.0				9.40
12	2.40	4.70					3.45
13	0.60	2.68					1.57
14	0.60	1.34					0.94
15							
16	1.20						0.63

* The total effort was 450 yards for each mesh.
1 Based on a total of 167 since 85 were mass weighed only.
2 Based on a total of 149 since 103 were mass weighed only.

Table 11. Mesh size effects on sauger catches in Apussigamasi Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	4	9	12	0	1		26
CUE (no./100 yds./day)*	0.67	1.5	2.0	-	0.17		0.72
CUE (kg./100 yds./day)*	0.18	0.48	0.99	-	0.03		0.28
Mean length (mm)	261	310	363	-	244		324
Mean weight(g)	273	322	497	-	160		389
Number mature	3	6	12	-	0		21
Number immature	1	3	0	-	1		4
% mature	75.0	66.7	10.0	-	0.0		84.0
Mean age(years)	6.5	9.9	14.0	-	4.0		11.0
Age (years)	Frequency (%)						
4	25.0	11.1			100.0		11.54
7	50.0	22.2	8.3				19.23
8	25.0	22.2	8.3				15.38
10		11.1					3.85
11			8.3				3.85
12		11.1	16.7				11.54
13			8.3				3.85
14		11.1	8.3				7.69
15			8.3				3.85
17			8.3				3.85
18			8.3				3.85
19		11.1					3.85
20			8.3				3.85
21			8.3				3.85

* Total effort was 600 yards of net for each mesh size.

Table 12. Mesh size effects on northern pike from Wuskwatim Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	9	14	10	4	1	0	38
CUE (no./100 yds./day)*	2.0	3.1	2.2	0.9	0.2	-	1.41
CUE (Kg/100 yds./day)*	0.95	2.10	2.38	1.06	0.38	-	1.15
Mean length (mm)	356	423	519	539	600	-	450
Mean weight (g)	476	675	1072	1195	1700	-	814
Number mature	4	6	7	4	1	-	22
Number immature	5	8	3	0	0	-	16
% mature	44.4	42.9	70.0	100	100	-	57.9
Mean age (years)	2.3	3.9	4.8	6.0	7.0	-	4.1
Age (years)	Frequency (%)						Total
1	44.44						10.53
2	22.22	21.43					13.16
3		35.71	10.00				15.79
4	22.22	7.14	30.00				15.79
5	11.11	7.14	30.00	50.00			18.42
6		21.43	30.00	25.00			18.42
7		7.14			100.00		5.26
8				25.00			2.63

*The total effort was 450 yards for each mesh.

Table 13. Mesh size effects on northern pike catches in Apussigamasi Lake, 1984.

	Mesh size (inches)						
	1.5	2.0	3.0	3.75	4.25	5.0	Total
Number caught	29	27	17	10	6	1	90
CUE (no./100 yds./day)*	4.83	4.50	2.83	1.67	1.00	0.17	2.50
CUE (kg./100 yds./day)*	2.53	2.61	3.72	3.59	2.63	0.20	2.55
Mean length (mm)	369	406	538	606	670	459	460
Mean weight(g)	524	579	1311	2155	2633	1220	1019
Number mature	11	9	15	9	6	1	51
Number immature	16	11	1	1	0	0	29
% mature	40.7	45.0	93.7	90.0	100.0	100.0	63.8
Mean age(years)	3.3	3.8	6.1	6.7	7.5	7.0	4.7
Age (years)	Frequency (%)						Total
0	6.9						2.22
1	10.3	3.7					4.44
2	31.0	22.2					16.67
3	10.3	22.2	5.9				11.11
4	6.9	11.1	5.9	20.0			8.89
5	3.4	7.4	29.4	10.0	16.7		11.11
6	24.1	11.1	23.5	20.0	33.3	100.0	20.00
7	3.4	11.1	11.8	10.0	16.7		10.00
8			5.9	20.0			3.33
9			5.9	10.0			2.22
10				10.0	16.7		2.22
11			5.9		16.7		2.22
Unknown	3.4	11.1	5.9				5.56

* Total effort was 600 yards of net for each mesh size.

Table 14. Age-specific size and maturity of whitefish from Wuskwatim Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	1	30	0	0	161 ± 7.91	62 ± 11.86	1.47
	2	15	0	0	237 ± 27.29	201 ± 72.66	1.49
	3	36	1	2.8	284 ± 12.86	368 ± 54.24	1.59
	4	15	6	40.0	334 ± 40.14	629 ± 170.58	1.67
	6	6	6	100	397 ± 26.68	1056 ± 192.32	1.68
	7	16	14	87.5	413 ± 27.38	1165 ± 259.46	1.64
	8	8	8	100	405 ± 16.29	1115 ± 193.61	1.66
	9	1	1	100	434	1610	1.97
	10	5	4	80.0	436 ± 36.70	1494 ± 345.66	1.79
	11	1	1	100	470	1820	1.75
	13	1	1	100	430	1210	1.52
	15	1	1	100	432	1340	1.66
	16	1	1	100	470	1560	1.50
Female	1	8	0	0	161 ± 4.66	64 ± 10.61	1.52
	2	4	0	0	251 ± 19.31	263 ± 63.44	1.64
	3	17	0	0	288 ± 14.71	379 ± 63.98	1.57
	4	19	2	10.5	341 ± 21.96	680 ± 143.66	1.70
	5	10	5	50.0	367 ± 13.50	841 ± 99.49	1.70
	6	8	7	87.5	403 ± 20.34	1158 ± 194.70	1.76
	7	13	12	92.3	407 ± 15.87	1182 ± 183.80	1.74
	8	11	11	100	416 ± 18.02	1306 ± 189.06	1.80
	10	5	5	100	457 ± 19.06	1684 ± 169.35	1.77
	11	1	1	100	426	1460	1.89
	12	2	2	100	452 ± 16.97	1700 ± 141.42	1.84
	16	1	1	100	462	1600	1.62
	17	1	1	100	508	2300	1.75
Both	1	60	0	0	161 ± 7.68	62 ± 11.06	1.46
	2	22	0	0	234 ± 29.61	204 ± 77.30	1.51
	3	55	1	1.8	285 ± 13.24	372 ± 56.38	1.59
	4	34	8	23.5	337 ± 30.99	657 ± 155.75	1.69
	5	10	5	50.0	366 ± 13.50	841 ± 99.49	1.70
	6	14	13	92.9	400 ± 22.48	1114 ± 193.18	1.72
	7	29	26	89.7	410 ± 22.76	1172 ± 224.97	1.68
	8	20	19	95.0	410 ± 18.44	1210 ± 216.47	1.73
	9	1	1	100	434	1610	1.97
	10	10	9	90.0	446 ± 29.59	1589 ± 275.46	1.78
	11	2	2	100	448 ± 31.11	1640 ± 254.56	1.82
	12	2	2	100	452 ± 16.97	1700 ± 141.42	1.84
	13	1	1	100	430	1210	1.52
	15	1	1	100	432	1340	1.66
	16	2	2	100	466 ± 5.66	1580 ± 28.28	1.56
	17	1	1	100	508	2300	1.75

Table 15. Age-specific size and maturity of whitefish from Apussigamasi Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	3	2	0	0	199 ± 4.24	160 ± 28.28	2.02
	5	5	0	0	283 ± 44.30	378 ± 171.08	1.56
	6	10	4	40.0	338 ± 48.20	670 ± 367.94	1.58
	7	42	32	76.2	359 ± 32.96	771 ± 246.56	1.60
	8	14	10	71.4	369 ± 31.93	833 ± 234.86	1.61
	9	4	4	100	381 ± 42.31	910 ± 337.34	1.59
	10	6	6	100	421 ± 14.88	1193 ± 148.68	1.60
	11	2	2	100	418 ± 14.14	1230 ± 183.85	1.68
	12	1	1	100	447	1230	1.38
	13	1	1	100	448	1310	1.46
	14	4	4	100	428 ± 24.50	1063 ± 267.63	1.37
	15	2	2	100	462 ± 5.66	1470 ± 169.71	1.50
	16	4	4	100	453 ± 10.89	1365 ± 175.97	1.46
	17	1	1	100	452	1480	1.60
	18	1	1	100	464	1610	1.61
	19	1	1	100	456	1510	1.59
	23	1	1	100	466	1660	1.64
Female	3	1	0	0	176	50	0.92
	4	1	0	0	179	100	1.74
	5	4	0	0	291 ± 28.54	408 ± 156.50	1.60
	6	13	4	30.3	317 ± 37.57	543 ± 223.21	1.63
	7	34	19	55.6	351 ± 42.41	748 ± 299.19	1.64
	8	24	18	75.0	388 ± 36.21	1021 ± 318.05	1.69
	9	3	1	33.3	368 ± 48.95	860 ± 406.32	1.64
	10	1	1	100	433	1290	1.59
	11	3	3	100	402 ± 18.82	1043 ± 106.93	1.61
	12	2	2	100	447 ± 32.53	1555 ± 487.90	1.71
	13	2	2	100	480 ± 28.99	1850 ± 282.84	1.68
	14	1	1	100	446	1530	1.72
	16	1	1	100	481	1450	1.30
	17	1	1	100	478	1880	1.72
	18	1	1	100	504	1840	1.44
Both	2	1	0	0	139	40	1.49
	3	5	0	0	185 ± 13.37	94 ± 61.89	1.37
	4	1	0	0	179	100	1.74
	5	9	0	0	287 ± 36.11	391 ± 155.12	1.58
	6	23	8	34.8	326 ± 42.81	598 ± 294.40	1.61
	7	77	51	66.2	354 ± 38.49	755 ± 273.04	1.62
	8	38	28	73.7	381 ± 35.49	952 ± 301.17	1.66
	9	7	5	71.4	375 ± 41.73	889 ± 335.63	1.61
	10	7	7	100	422 ± 14.36	1207 ± 140.56	1.60
	11	5	5	100	409 ± 17.34	1118 ± 156.91	1.64
	12	3	3	100	447 ± 23.00	1447 ± 392.73	1.60
	13	3	3	100	469 ± 27.40	1670 ± 370.41	1.60
	14	5	5	100	432 ± 22.65	1156 ± 312.14	1.44
	15	2	2	100	462 ± 5.66	1470 ± 169.71	1.50
	16	5	5	100	459 ± 15.68	1382 ± 157.07	1.43
	17	2	2	100	465 ± 18.38	1680 ± 282.84	1.66
	18	2	2	100	484 ± 28.28	1725 ± 162.63	1.53
	19	1	1	100	456	1510	1.59
	23	1	1	100	466	1660	1.64

Table 16. Age specific size and maturity of walleye from Muskwatim Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	1	4	0	0	154 ± 4.90	43 ± 5.00	1.16
	2	1	0	0	160	50	1.22
	3	3	0	0	249 ± 9.98	160 ± 20.00	1.04
	4	1	0	0	282	220	0.98
	5	7	0	0	310 ± 11.97	229 ± 32.88	1.00
	6	1	0	0	346	440	1.06
	7	1	0	0	340	440	1.12
	8	5	5	100	369 ± 32.64	586 ± 134.09	1.15
	9	2	1	50.0	360 ± 16.97	515 ± 49.50	1.11
	10	11	10	90.9	385 ± 28.72	641 ± 132.32	1.11
	11	26	25	96.2	402 ± 22.40	754 ± 138.68	1.15
	12	3	3	100	403 ± 16.65	763 ± 101.16	1.16
	13	1	1	100	402	740	1.14
	15	1	1	100	432	820	1.02
	16	2	2	100	424 ± 28.28	860 ± 113.14	1.13
	17	6	6	100	418 ± 21.17	887 ± 184.57	1.20
	18	4	4	100	424 ± 19.73	958 ± 141.04	1.25
Female	1	3	0	0	160 ± 6.00	40 ± 0	0.98
	2	4	0	0	191 ± 17.08	65 ± 10.0	0.95
	3	5	0	0	251 ± 24.41	164 ± 37.82	1.03
	4	2	0	0	247 ± 7.07	165 ± 35.36	1.09
	5	12	2	16.7	340 ± 37.24	433 ± 196.06	1.05
	6	1	0	0	332	380	1.04
	7	2	1	50.0	365 ± 21.21	535 ± 120.21	1.09
	8	8	2	25.0	384 ± 30.56	616 ± 140.91	1.08
	9	4	3	75.0	402 ± 19.62	693 ± 117.01	1.06
	10	23	18	78.3	428 ± 35.07	867 ± 220.03	1.08
	11	43	37	86.0	454 ± 41.01	1018 ± 286.76	1.07
	12	4	4	100	447 ± 34.36	1010 ± 276.41	1.11
	13	4	3	75.0	460 ± 66.60	1083 ± 406.48	1.07
	15	1	1	100	546	1820	1.12
	17	4	4	100	498 ± 33.88	1528 ± 439.19	1.21
	21	1	1	100	594	2054	0.98
Both	1	12	0	0	154 ± 14.72	42 ± 7.18	1.19
	2	6	0	0	180 ± 20.57	60 ± 10.95	1.04
	3	8	0	0	250 ± 19.24	163 ± 30.59	1.03
	4	3	0	0	259 ± 20.82	183 ± 40.41	1.05
	5	19	2	10.5	329 ± 33.40	383 ± 168.10	1.03
	6	2	0	0	339 ± 9.90	410 ± 42.43	1.05
	7	3	1	33.3	357 ± 20.82	503 ± 101.16	1.10
	8	13	7	53.8	378 ± 30.89	605 ± 133.46	1.11
	9	6	4	66.7	388 ± 27.35	633 ± 130.79	1.08
	10	34	28	82.4	414 ± 38.62	794 ± 221.69	1.09
	11	69	62	89.9	434 ± 43.14	919 ± 272.78	1.10
	12	7	7	100	428 ± 34.95	904 ± 242.89	1.13
	13	5	4	80.0	448 ± 63.15	1014 ± 383.90	1.09
	15	2	2	100	489 ± 80.61	1320 ± 707.11	1.07
	16	2	2	100	424 ± 28.28	860 ± 113.14	1.13
	17	10	10	100	450 ± 48.69	1143 ± 439.02	1.20
	18	4	4	100	424 ± 19.73	958 ± 141.04	1.25
	21	1	1	100	594	2045	0.98

Table 17. Age specific size and maturity of walleye from Apussigamasi Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	2	2	0	0	197 ± 39.60	100 ± 70.71	1.18
	3	27	0	0	205 ± 19.38	98 ± 54.63	1.07
	4	12	0	0	230 ± 24.87	131 ± 54.18	1.03
	5	21	2	9.5	273 ± 30.81	244 ± 95.41	1.16
	6	6	1	16.7	285 ± 13.05	292 ± 80.85	1.24
	7	2	2	100	347 ± 15.56	475 ± 106.07	1.13
	8	6	3	50.0	325 ± 13.47	408 ± 61.45	1.18
	9	1	1	100	300	300	1.11
	12	2	2	100	429 ± 4.24	950 ± 14.14	1.21
	13	1	1	100	430	1450	1.82
	14	1	1	100	446	1020	1.15
	15	2	2	100	426 ± 74.25	975 ± 601.04	1.17
	18	1	1	100	379	450	0.83
Females	2	6	0	0	184 ± 16.06	63 ± 29.44	0.98
	3	23	0	0	208 ± 29.79	110 ± 75.35	1.13
	4	12	0	0	252 ± 38.00	195 ± 81.52	1.19
	5	10	0	0	285 ± 32.45	249 ± 112.04	1.01
	7	3	1	33.3	320 ± 11.53	377 ± 70.24	1.14
	8	5	3	60.0	317 ± 27.41	332 ± 87.58	1.03
	9	5	3	60.0	381 ± 62.31	622 ± 294.23	1.06
	10	4	3	75.0	370 ± 26.80	550 ± 115.76	1.08
	18	1	1	100	544	2060	1.28
	19	1	1	100	571	2440	1.31
	22	1	1	100	478	1100	1.01
	24	1	1	100	640	3530	1.35
Both	0	1	0	0	114	20	1.35
	1	1	0	0	164	50	1.13
	2	14	0	0	178 ± 19.64	66 ± 32.96	1.14
	3	57	0	0	205 ± 23.72	102 ± 60.81	1.11
	4	32	0	0	231 ± 36.01	144 ± 77.03	1.08
	5	33	2	6.1	276 ± 30.67	242 ± 97.03	1.11
	6	6	1	16.7	285 ± 13.05	292 ± 80.85	1.24
	7	5	3	60.0	331 ± 18.59	416 ± 90.44	1.13
	8	11	6	54.5	322 ± 20.26	374 ± 80.90	1.11
	9	6	4	66.7	368 ± 64.85	568 ± 294.17	1.07
	10	4	3	75.0	370 ± 26.80	550 ± 115.76	1.08
	12	2	2	100	429 ± 4.24	950 ± 14.14	1.21
	13	1	1	100	430	1450	1.82
	14	1	1	100	446	1020	1.15
	15	2	2	100	426 ± 74.25	975 ± 601.04	1.17
	18	2	2	100	462 ± 116.67	1255 ± 1138.44	1.06
	19	1	1	100	571	2440	1.31
	22	1	1	100	478	1100	1.01
	24	1	1	100	640	3530	1.35

Table 18. Age-specific size and maturity of sauger from Wuskwatim Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	3	21	2	9.5	200 ± 13.47	68 ± 12.09	0.85
	4	4	0	0	213 ± 15.10	110 ± 42.43	1.19
	5	6	0	0	214 ± 12.93	85 ± 12.25	0.87
	6	3	1	33.3	259 ± 15.14	160 ± 36.06	0.91
	7	8	2	25.0	242 ± 14.97	123 ± 22.19	0.86
	8	13	12	92.3	252 ± 10.92	149 ± 26.33	0.91
	9	29	10	34.5	252 ± 12.54	144 ± 22.47	0.89
	10	17	12	70.6	267 ± 11.96	177 ± 22.29	0.93
	11	13	7	53.8	272 ± 8.16	178 ± 17.39	0.88
	12	5	4	80.0	268 ± 19.77	174 ± 38.47	0.89
	13	1	0	0	298	200	0.76
	14	2	2	100	278 ± 5.66	195 ± 21.21	0.91
Female	3	13	0	0	202 ± 10.16	70 ± 12.25	0.84
	4	8	0	0	225 ± 13.98	114 ± 36.62	1.01
	5	8	1	12.5	228 ± 11.88	103 ± 13.69	0.86
	6	5	4	80.0	247 ± 5.76	133 ± 15.65	0.88
	7	27	16	59.3	244 ± 10.60	138 ± 27.43	0.95
	8	27	22	81.5	255 ± 13.58	152 ± 26.21	0.92
	9	37	31	83.8	268 ± 13.34	175 ± 25.23	0.90
	10	19	15	78.9	274 ± 14.55	186 ± 30.72	0.90
	11	17	17	100	275 ± 18.59	192 ± 31.71	0.92
	12	6	4	66.7	271 ± 15.71	178 ± 35.45	0.89
	13	4	4	100	285 ± 8.06	208 ± 27.54	0.90
	14	1	1	100	312	280	0.92
	16	2	1	50.0	290	200	0.82
Both	1	1	0	0	116	20	1.28
	2	2	0	0	174 ± 11.31	50 ± 14.14	0.94
	3	48	2	4.2	199 ± 11.64	68 ± 11.23	0.87
	4	13	0	0	220 ± 14.63	109 ± 37.07	1.05
	5	16	1	6.3	223 ± 13.20	96 ± 15.00	0.87
	6	8	5	62.5	252 ± 11.25	143 ± 26.58	0.89
	7	35	18	51.4	244 ± 11.53	135 ± 26.79	0.93
	8	41	34	82.9	253 ± 12.76	151 ± 25.65	0.92
	9	67	41	61.2	261 ± 15.06	162 ± 28.21	0.90
	10	37	27	73.0	271 ± 13.56	182 ± 26.73	0.91
	11	30	24	80.0	274 ± 14.85	186 ± 26.98	0.90
	12	11	8	72.7	270 ± 16.53	176 ± 35.01	0.89
	13	5	4	80.0	287 ± 9.23	206 ± 24.08	0.87
	14	3	3	100	289 ± 20.03	223 ± 51.32	0.91
	16	2	1	50.0	290	200	0.82

Table 19. Age specific size and maturity of sauger from Apussigamasi Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	7	3	2	66.7	293 ± 15.14	347 ± 132.04	1.40
	8	3	2	66.7	299 ± 6.11	293 ± 25.17	1.10
	10	1	1	100	314	330	1.07
	11	1	1	100	335	460	1.22
	12	2	2	100	350 ± 11.31	415 ± 63.64	0.96
	13	1	1	100	358	400	0.87
	17	1	1	100	362	500	1.05
	19	1	1	100	370	550	1.09
Female	4	1	0	0	244	160	1.10
	7	2	2	100	307 ± 26.87	315 ± 120.21	1.06
	8	1	1	100	360	450	0.96
	12	1	1	100	393	750	1.24
	14	2	1	50.0	348 ± 20.51	415 ± 35.36	1.00
	15	1	1	100	394	580	0.95
	18	1	1	100	388	500	0.86
	20	1	1	100	378	600	1.11
Both	4	3	0	0	216 ± 32.87	120 ± 60.83	1.09
	7	5	4	80.0	298 ± 18.89	334 ± 112.38	1.26
	8	4	3	75.0	315 ± 30.74	333 ± 80.98	1.06
	10	1	1	100	314	330	1.07
	11	1	1	100	335	460	1.22
	12	3	3	100	364 ± 26.08	527 ± 198.58	1.05
	13	1	1	100	358	400	0.87
	14	2	1	50.0	348 ± 20.51	415 ± 35.36	1.00
	15	1	1	100	394	580	0.95
	17	1	1	100	362	500	1.05
	18	1	1	100	388	500	0.86
	19	1	1	100	370	550	1.09
	20	1	1	100	378	600	1.11
	21	1	1	100	344	420	1.03

Table 20. Age specific size and maturity of northern pike from Wuskwatim Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Male	1	2	0	0	238 ± 53.74	95 ± 49.50	0.69
	2	2	1	50.0	316 ± 11.31	225 ± 7.07	0.72
	3	2	1	50.0	394 ± 33.94	400 ± 113.14	0.65
	4	3	2	66.7	449 ± 75.64	720 ± 442.27	0.73
	5	4	4	100	528 ± 15.44	1008 ± 206.14	0.69
	6	7	6	85.7	531 ± 41.68	1223 ± 369.45	0.80
	7	1	1	100	600	1700	0.79
	8	1	1	100	578	1560	0.81
Female	1	2	0	0	268 ± 11.31	120 ± 28.28	0.62
	2	3	0	0	306 ± 14.00	303 ± 173.88	1.05
	3	4	1	25.0	380 ± 42.03	365 ± 137.23	0.65
	4	3	3	100	523 ± 40.95	983 ± 320.05	0.68
	5	3	3	100	553 ± 28.73	1137 ± 202.07	0.67
	7	1	1	100	634	2520	0.99
Both	1	4	0	0	253 ± 36.13	108 ± 35.94	0.65
	2	5	1	20.0	310 ± 12.65	272 ± 130.27	0.92
	3	6	2	33.3	384 ± 36.69	377 ± 119.11	0.65
	4	6	5	83.3	486 ± 67.73	852 ± 374.19	0.70
	5	7	7	100	539 ± 24.19	1063 ± 199.06	0.68
	6	7	6	85.7	531 ± 41.68	1223 ± 369.45	0.80
	7	2	2	100	617 ± 24.04	2110 ± 579.83	0.89
	8	1	1	100	578	1560	0.81

Table 21. Age specific size and maturity of northern pike from Apussigamasi Lake, 1984.

Sex	Age (years)	Number caught	Mature Number	Mature Percent	Mean Length ± std. dev. (mm)	Mean Weight ± std. dev. (g)	Mean Condition Factor
Males	1	3	0	0	267 ± 10.97	127 ± 25.17	0.67
	2	4	1	25.0	312 ± 40.13	198 ± 81.80	0.63
	3	3	0	0	354 ± 12.49	340 ± 40.00	0.76
	4	4	3	75.0	411 ± 66.10	493 ± 246.22	0.68
	5	6	5	83.3	478 ± 81.21	845 ± 434.13	0.72
	6	7	7	100	548 ± 56.61	1277 ± 351.51	0.76
	7	4	4	100	568 ± 28.36	1340 ± 197.65	0.73
	8	1	1	100	664	1840	0.63
	9	1	1	100	802	3455	0.67
	10	2	2	100	708 ± 121.62	3213 ± 1926.87	0.84
	11	1	1	100	818	3850	0.70
	Unknown	2	-	-	530 ± 77.78	1105 ± 473.76	0.72
Females	0	2	0	0	235 ± 9.90	110 ± 14.14	0.86
	1	1	0	0	275	150	0.72
	2	11	0	0	304 ± 33.69	220 ± 95.72	0.75
	3	6	1	16.7	343 ± 74.44	353 ± 174.41	0.88
	4	4	2	50.0	414 ± 86.58	535 ± 347.23	0.70
	5	4	3	75.0	484 ± 55.20	783 ± 283.59	0.67
	6	11	10	90.9	515 ± 70.14	1057 ± 444.57	0.73
	7	5	5	100	594 ± 128.05	1988 ± 960.71	0.90
	8	2	2	100	726 ± 76.37	3183 ± 1071.27	0.82
	9	1	1	100	909	6410	0.85
	11	1	1	100	850	4750	0.77
	Unknown	3	-	-	327 ± 84.87	283 ± 165.63	0.76
Both	0	2	0	0	235 ± 9.90	110 ± 14.14	0.86
	1	4	0	0	269 ± 9.88	133 ± 23.63	0.68
	2	15	1	6.7	306 ± 34.19	214 ± 89.89	0.72
	3	10	1	10.0	343 ± 57.29	340 ± 134.42	0.84
	4	8	5	62.5	412 ± 71.33	514 ± 279.59	0.69
	5	10	8	80.0	480 ± 68.48	820 ± 364.08	0.70
	6	18	17	94.4	528 ± 65.65	1142 ± 414.83	0.74
	7	9	9	100	582 ± 93.25	1700 ± 769.92	0.82
	8	3	3	100	705 ± 64.79	2735 ± 1083.78	0.75
	9	2	2	100	856 ± 75.66	4932 ± 2089.50	0.76
	10	2	2	100	708 ± 121.62	3213 ± 1926.87	0.84
	11	2	2	100	834 ± 22.63	4300 ± 636.40	0.74
	Unknown	5	-	-	408 ± 132.20	612 ± 521.89	0.74

Table 22. Length-weight regressions for fish caught in Wuskwatim and Apussigamasi lakes, 1984.

Species	Lake	Length-weight equation	n	r
Whitefish	Wuskwatim	$\log_e$ weight = -12.04 + 3.176 $\log_e$ length	264	0.996
	Apussigamasi	$\log_e$ weight = -12.02 + 3.165 $\log_e$ length	197	0.982
Walleye	Wuskwatim	$\log_e$ weight = -11.37 + 2.991 $\log_e$ length	206	0.993
	Apussigamasi	$\log_e$ weight = -12.02 + 3.107 $\log_e$ length	181	0.963
Sauger	Wuskwatim	$\log_e$ weight = -11.18 + 2.921 $\log_e$ length	319	0.953
	Apussigamasi	$\log_e$ weight = -10.64 + 2.859 $\log_e$ length	26	0.947
Northern pike	Wuskwatim	$\log_e$ weight = -12.21 + 3.062 $\log_e$ length	38	0.972
	Apussigamasi	$\log_e$ weight = -11.78 + 2.995 $\log_e$ length	90	0.989
Cisco	Wuskwatim	$\log_e$ weight = -12.98 + 3.337 $\log_e$ length	285	0.995
White sucker	Wuskwatim	$\log_e$ weight = -11.38 + 3.037 $\log_e$ length	91	0.985
	Apussigamasi	$\log_e$ weight = -10.22 + 2.855 $\log_e$ length	267	0.981
Longnose sucker	Wuskwatim	$\log_e$ weight = - 9.60 + 2.752 $\log_e$ length	47	0.950

Table 23. Mortality and survival rates for fish from Wuskwatim and Apussigamsi lakes, 1984.

Species	Lake	Instantaneous Mortality (Z)	Annual Mortality (A)	Annual Survival (S)	r
Whitefish	Wuskwatim	0.223	0.200	0.800	0.942
	Apussigamasi	0.192	0.175	0.825	0.950
Walleye	Wuskwatim	0.296	0.256	0.744	0.905
	Apussigamasi	0.383	0.318	0.682	0.986
Sauger	Wuskwatim	0.539	0.417	0.583	0.965
	*Apussigamasi	-	-	-	-
Northern pike	*Wuskwatim	-	-	-	-
	Apussigamasi	0.323	0.276	0.724	0.938

* insufficient data

Table 24. Maturity rate equations and mean weighted age of onset of maturity for fish from Wuskwatim and Apussigamasi lakes, 1984.

Species	Lake	Sex	Regression*	r	Age at 50% mature(yrs)	Mean age Maturity (yrs)
Whitefish	Wuskwatim	Male	insufficient data	-	-	5.50
		Female	y = 8.133 - 1.583 x	0.973	5.14	5.60
		Both	y = 8.062 - 1.597 x	0.951	5.05	5.52
	Apussigamasi	Male	y = 4.064 - 0.660 x	0.613[1]	6.16	7.12
		Female	y = 6.503 - 0.954 x	0.997	6.82	8.05
		Both	y = 3.202 - 0.495 x	0.691[1]	6.47	7.53
Walleye	Wuskwatim	Male	y = 14.313 - 1.616 x	0.943[1]	8.86	8.63
		Female	y = 4.990 - 0.615 x	0.845	8.11	9.19
		Both	y = 5.740 - 0.724 x	0.998	7.93	8.99
	Apussigamasi	Male	insufficient data	-	-	9.24
		Female	y = 4.269 - 0.538 x	0.877[1]	7.93	10.47
		Both	y = 5.781 - 0.729x	0.846	7.93	9.21
Northern pike	Wuskwatim	Male	y = 1.180 - 0.480 x	0.941	2.46	3.48
		Female	insufficient data	-	-	3.75
		Both	y = 1.281 - 0.541 x	0.690[1]	2.37	3.41
	Apussigamasi	Male	y = 2.874 - 0.930 x	0.976[1]	3.09	4.17
		Female	y = 5.323 - 1.282 x	0.993	4.15	4.67
		Both	y = 5.752 - 1.438 x	0.966	4.00	4.45
Sauger	Wuskwatim	Male	y = 2.860 - 0.350 x	0.454[1]	8.17	10.01
		Female	y = 3.190 - 0.520 x	0.500[1]	6.13	7.38
		Both	y = 3.157 - 0.403 x	0.646	7.83	8.18
	Apussigamasi	Male	insufficient data	-	-	8.00
		Female	insufficient data	-	-	7.50
		Both	insufficient data	-	-	8.20

* $Y = \log_e \left(\frac{100-Yi}{Yi}\right)$ where Yi = frequency of mature fish in class i; $0<Yi<100$ Yi
x = age(years)
1 = not significant at P=0.05
s = Abrosov (1967)

Table 25. Walford equation data for fish from Wuskwatim and Apussigamasi lakes, 1984.

Species	Lake	Walford Equation	L_{∞}	Age classes used	r
Whitefish	Wuskwatim	y = 111.452 + 0.765	474	1-6	0.995
	Apussigamasi	y = 86.862 + 0.829	438	1-8	0.908
Walleye	Wuskwatim	y = 67.239 + 0.866	501	1-10	0.986
	Apussigamasi	y = 48.620 + 0.917	589	1-7	0.932
Sauger	Wuskwatim	y = 88.612 + 0.680	277	1-7	0.992

Table 26. Brody relationship for fish from Wuskwatim and Apussigamasi lakes, 1984.

Species	Lake	Log $(L_{\infty}-L_t)$ = a-b	Age classes used	r
Whitefish	Wuskwatim	y = 6.027 - 0.275	1-7	0.997
	Apussigamasi	y = 6.405 - 0.190	1-9	0.957
Walleye	Wuskwatim	y = 6.013 - 0.154	1-12	0.993
	Apussigamasi	y = 6.200 - 0.085	1-8	0.983
Sauger	Wuskwatim	y = 5.492 - 0.346	1-9	0.966